

REMARKS

The following remarks are responsive to the Office Action mailed March 28, 2008, which rejected claims 31-34, 37, 38, and 40-52.

Claim 31 has been amended.

Claims 31-34, 37, 38, and 40-52, for a total of 19 claims, remain pending in the application.

Reconsideration of claims 31-34, 37, 38, and 40-52 is respectfully requested. No new matter has been added.

Claim Rejections - 35 U.S.C. §103(a)

Claim 31-34, 37, 38, and 40-52 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Dubin (U.S. Patent No. 5, 284,492) in combination with Ford (U.S. Patent No. 3,756,794), Gunnerman (WO 95/27021), and Schwab (U.S. Patent No. 5,669,938). Applicants respectfully traverse.

As an initial matter, Applicants wish to emphasize that the Examiner has the burden of providing evidence of prima facie obviousness to maintain a rejection. See MPEP §2143. See also In Re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). To prove prima facie obviousness, the Examiner must provide evidence in the prior art of a motivation to combine or modify a reference, a reasonable expectation of success, and a teaching of each and every claimed element. *Id.* The Examiner has failed to provide references that teach each and every claimed element of claim 31, and the claims that depend therefrom, or a proper motivation to combine the references.

The Examiner contends that Dubin discloses a fuel oil composition comprising an emulsion of water and a fuel oil that is used as a combustion fuel for a gas turbine, which results in reduced nitrogen oxides emissions and improved combustion efficiency. The Examiner continues to say that the oil phase comprises a light oil and the emulsions have the most practical significance in

applications when combusted alone are those having about 5% to about 50% water and are preferably about 10% to about 35% water-in-fuel oil by weight. The Examiner also states that a desirable emulsification system, which is employed to maintain the emulsion, comprises about 25% to about 85% by weight of an amide, about 5% to about 25% by weight of a phenolic surfactant, and about 0% to about 40% by weight of a difunctional block polymer terminating in a primary hydroxyl group. In addition, according to the Examiner, the addition of a component selected from the group consisting of dimmer and/or trimer acids, sulfurized castor oil, phosphate esters, and mixtures thereof, increases the lubricity of the emulsion. Furthermore, the Examiner contends that a corrosion inhibitor is taught in Dubin also. The Examiner acknowledges that Dubin does not teach the addition of an ignition delay modifier including ammonium nitrate as an emulsion stabilizer and an antifreeze additive.

Each and every element of independent claim 31, and the rest of the claims, which depend therefrom, is not taught. In particular, claim 31 has been amended to recite a coupling agent that is about “.04%-.1% by weight of said fuel emulsion wherein said coupling agent maintains phase stability of said fuel emulsion at high temperatures and shear pressures of an internal combustion engine and wherein said coupling agent is a water soluble salt formed from the neutralization reaction of an acid selected from a group consisting of: a di-acid of the Diels-Alder adducts of unsaturated fatty acids and a tri-acid of the Diels-Alder adducts of unsaturated fatty acids; and an alkanolamine.”

Dubin does not disclose that its emulsification system contains a coupling agent. Applicant acknowledges that Dubin does disclose the use of di and tri-acids as lubricity enhancers. These components, however, are not coupling agents. The coupling agents according to the invention of claim 31 is “a **water soluble salt.**” Dubin discloses no such component in its emulsification system.

The Examiner contends that there is no chemical reaction that takes place that causes the Diels-Alder acids to neutralize, but that the components are simply mixed together. Applicants respectfully disagree. When one considers that neither alkanolamines nor Diels-Alders adducts are not water soluble to any great extent, the water solubility of the coupling agent that results must be a

result of a reaction. It is also apparent, given the solubility, that these components would have different properties.

In addition, the Examiner contends that Dubin allows for the addition to the emulsion the same Diels-Alder acids with an alkanolamine, which may give way to the water soluble salt. However, the invention of claim 31 allows for the possibility of adding these components in addition to the coupling agent. A neutralizer is added to the emulsification and a lubricant may be added to the emulsification. The neutralizer may be an alkanolamine and the lubricant may be a di or tri-acid. These components are **in addition** to the coupling agent.

Given the fact that not every element of claim 31 is taught or suggested by Dubin, either alone or in combination with other references, the Examiner has not met the prima facie case for obviousness. Applicants respectfully request reconsideration of claim 31, and claims 32-34, 37, 38, and 40-52 which are dependent therefrom, and allowance thereof.

The Examiner also contends that Ford discloses emulsified fuel compositions comprising a hydrocarbon fuel such as diesel and gasoline fuels, an emulsifier, water, and an emulsion stabilizer. In addition, the Examiner states that ammonium nitrate may be added to the emulsion as a freezing point depressant or an antifreeze additive.

Next, the Examiner states that Gunnerman discloses aqueous fuel compositions for internal combustion engines. The fuel comprises a fluid emulsion comprising 20% to 80% vol. % water, 40% to 60% carbonaceous fuel, about 2% to less than 20 vol. % alcohol, and about 0.3 to 1 vol. % of a nonionic emulsifier. The Examiner also states that Schwab discloses diesel fuel emulsions containing an emission reducing amount of at least one fuel-soluble organic nitrate ignition improver such as 2-ethylhexyl nitrate.

The Examiner contends that it would have been obvious to one skilled in the art to have followed the teachings of the prior art and to have added the ammonium nitrate anti-freeze additive of Ford, the organic nitrate ignition improver of Schwab, and the anti-freeze inhibitor of Gunnerman to the hydrocarbon fuel emulsion of Dubin in order to provide a hydrocarbon fuel emulsion having

improved anti-freeze and ignition properties. Applicants respectfully disagree.

Applicants note that the “[d]etermination of obviousness cannot be based on the hindsight combination of components selectively culled from the prior art to fit the parameters of the patented invention.” Crown Operations International, Ltd. v. Solutia Inc., 289 F.3d 1367, 1376, 62 USPQ2d 1917 (Fed. Cir. 2002) (quoting ATD Corp. v. Lydall, Inc., 159 F.3d 534, 546, 48 USPQ2d 1321, 1329 (Fed. Cir. 1998)). As previously stated by Applicants, Ford does not discuss the use of ammonium nitrate by itself as a stabilizer, the water contents disclosed in Ford are 0.75% to 12% by weight for an oil dispersed fuel (water the continuous phase), and the ammonium nitrate concentrations are much higher than the concentration of the present invention. Schwab teaches the use of fuel-soluble organic nitrate ignition improvers for a water in oil emulsion (oil being continuous phase). Gunnerman mentions temperatures of 1700°F or above, which is substantially higher than the 160°F to 200°F usually seen in internal combustion fuel systems. Therefore, considering that each of the above references provides conditions that are much different from the present invention, and it would not be obvious that the components as presented in these vastly different conditions would work similarly to the conditions of the present invention. The Examiner has used hindsight to say that it would be obvious for the individual components used in vastly different conditions to be used in the present invention.

Claims 32-34, 37-38, and 40-52 are dependent from Claim 31. Thus these claims are allowable for the same reasons present above. Therefore, Applicants request the withdrawal of the 35 U.S.C. § 103(a) rejections of claims 32-34, 37, 38, and 40-52, and allowance thereof.

In sum, Applicants respectfully request the withdrawal of the 35 U.S.C. § 103(a) rejections to Claims 31-34, 37, 38, and 40-52, and respectfully request allowance thereof.

Amended Claims

Claim 31 has been amended in this response. In addition to the amendment dealing with coupling agent, which was discussed above, the lubricant component was amended due to a typo. It

now reads as it should according to page 7 of the specification. Also, a comma was added for clarity. All amendments are supported by the specification, particularly pages 7 and 9.

CONCLUSION

Applicants submit that the above amendments and remarks place the pending claims in a condition for allowance. Therefore, a Notice of Allowance is respectfully requested.

Should the Examiner wish to discuss any of the above in greater detail, then the Examiner is invited to contact the undersigned at (602) 262-5714 at the Examiner's convenience to further the allowance of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required for this amendment, or credit any overpayment, to Deposit Account 500612.

In the event that an extension of time is required or may be required in addition to that requested in a petition for an extension of time, the Commissioner is requested to grant a petition for that extension of time which is required to make this response timely and is hereby authorized to charge any fee for such an extension of time or credit any overpayment for an extension of time to Deposit Account 500612.

Respectfully submitted,

/dusty vogelpohl/

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